**U.S. DEPARTMENT OF COMMERCE**
**National Oc anic and Atm sph ric Admin.**
National Ocean Service
Office of Ocean Resource Conservation and Assessment
Hazardous Materials Response and Assessment Division
c/o EPA Office of Site Remediation and Restoration (HIO)
J.F. Kennedy Federal Building
Boston, MA 02203
3 October 1997

Ms. Christine Williams
U.S. EPA Office of Site Remediation and Restoration
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Mr. Phil Otis
U.S. Department of the Navy
Northern Division - NAVFAC
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Code 1811/PO - Mail Stop 82
Lester, PA 19113-2090

Dear Christine/Phil:

Thank-you for the Addendum to the Sites 03 and 09 Phase III Work Plan: Offshore Geotechnical Sampling and Confirmation Study at Site 09 (NCBC), prepared by E.A. Engineering, Science, and Technology, September 11, 1997. The document presented information on geotechnical sampling and a confirmation study for design of the shoreline revetment for Site 09. In addition, the Navy plans to 1. sample the intertidal and subtidal zones to support the design of the wetlands remedial action, 2. provide stratigraphic data to compare with the stratigraphy interpreted from previous geophysical studies, and 3. continue data collection to evaluate the potential for a groundwater pathway between the Site and the harbor sediments. This work will be accomplished by the drilling and sampling of 15 soil borings in the offshore area of Allen Harbor adjacent to the Site.

Soil boring samples will undergo the following geotechnical analyses:

- Standard classification of soils for engineering purposes
- Liquid limit, plastic limit, and plasticity index
- Water content
- Particle-size analysis of soils
- Load control cyclic triaxial strength of soil
- Consolidated-undrained triaxial compression test on cohesive soils
- Unconsolidated, undrained compressive strength of cohesive soils in triaxial compression
- One-dimensional consolidation properties of soil

Each bore hole will provide three samples for chemical analyses: one at 1 to 2 m below the floor of the harbor, one at 6 to 7.5 m below the top of the gray silt layer, and a peat sample (if present). In addition, groundwater samples will be collected at the same depth intervals for chemical analyses.

The document also included a Quality Assurance Project Plan (QAPP) that outlined the data quality objectives of the project and the methods to be used to insure data quality.

## Comments

*1. Is the Plan Sufficient?*
The proposed sampling should support the stated objectives of the work plan. In particular, the installation of off-shore soil borings in the nearshore area of the Allen Harbor Landfill should help to identify potential groundwater pathways leading from the landfill to the harbor. Rationale was presented for the placement of each of the 15 soil borings, and for each of the soil borings; one of the stated objectives was to aid in the assessment of the potential migration of contaminants from the Site to the harbor sediments. From Figure 2-1 of the document, it appears that the soil borings along the entire face of the landfill bordering Allan Harbor should be sufficient to identify potential groundwater pathways between the landfill and the harbor. Soil borings SB-5, SB-6, SB-7, SB-10, and SB-15 have been placed along what may be possible buried channels in the harbor identified through seismic reflection surveys. The total number of soil borings, as well as their placement, should allow a determination of whether there is a groundwater migration pathway between the Site and harbor sediments.

2. *Will the Navy be able to determine the groundwater pathway offshore?*
As stated above, the proposed sampling should allow a determination as to whether there is a groundwater pathway between the Site and the harbor. However, it is certainly possible that there may be multiple groundwater pathways and there may be several discharge points within the harbor. The proposed sampling will allow a qualitative determination of the existence of groundwater pathways, but it will not likely be able to quantitate the number of potential pathways or their discharge points. Depending on the results of the study, additional sampling may be necessary to better characterize groundwater pathways and their discharge points within the harbor.

3. *Will the chemical analyses allow a sufficient delineation of the contamination?*
From the information provided in the work plan, it appears that the major objective in conducting sediment/soil and groundwater chemical analyses is to identify potential groundwater pathways between the landfill and the harbor. All of the sediment/soil samples will be collected from subsurface soil borings, no surficial sediments are to be collected for analyses. The proposed chemical analyses should be sufficient for helping in the identification of potential groundwater pathways, but will not allow a delineation of contamination throughout the harbor. Depending on the results of the proposed study, it may be necessary to do additional sampling if groundwater pathways are identified that indicate that contamination may have moved further off shore than previously thought. No additional sampling is recommended until the results of the proposed study have been evaluated.

Please let me know if you have any questions.

Sincerely,

Kenneth Finkelstein, Ph.D.

cc: Tim Prior (USF&WS)